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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,938	12/15/2003	Joseph John Fatula JR.	SJ0920030067US1	3722

45216 7590 09/24/2008
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ART UNIT	PAPER NUMBER
2141	

MAIL DATE	DELIVERY MODE
09/24/2008	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/735,938
Filing Date: December 15, 2003
Appellant(s): FATULA, JOSEPH JOHN

____
Brian C. Kunzler
<u>For Appellant</u>

EXAMINER'S ANSWER

This is in response to the appeal brief filed August 20th, 2008, appealing from the Office action mailed February 5th, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The Appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The Appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal:

Chase et al. "Dynamic virtual clusters in a grid site manager." June 22, 2003. 12th IEEE International Symposium on High Performance Distributed Computing. Pgs. 90-100.

Fu et al. "SHARP: An Architecture for Secure Resource Peering," October 19th, 2003, ACM SOSP, ACM SOSP'03, pgs. 133-148.

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

1. Claims 1-9 and 20-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Chase et al.* ("Dynamic virtual clusters in a grid site manager", hereinafter "*Chase*") and *Fu et al.* ("SHARP: An Architecture for Secure Resource Peering", hereinafter "*Fu*").

2. As per claims 1, 20, 24, and 30, *Chase* teaches an autonomic management apparatus for autonomic management of system resources on a grid computing system, (*Chase*, abstract and overview sections)

the apparatus comprising:

a monitor module configured to monitor the grid computing system for a trigger event; (*Chase*, section 3.2, see monitoring performed by virtual cluster management module)

a policy module configured to access one of a plurality of system policies, each of the plurality of system policies corresponding to an operational control parameter of a system resource of the grid computing system; and a regulation module configured to autonomically regulate the system resource in response to a recognized trigger event according to one of the plurality of system policies (*Chase*, section 4, see e.g., the resize function that applies policies to allocate and reallocate system resources, where the functionality is also performed based on a trigger event).

However, *Chase* fails to specifically teach wherein the plurality of system policies comprises a system prediction policy.

Fu teaches the use of system prediction policies (*Fu*, see overview of pg. 134, paragraphs 2 and 3; see section 2.2 discussing predictive policies where resource use is anticipated).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined *Chase* and *Fu* to provide the framework of *Fu* in the system of *Chase*, because *Fu* describes the SHARP framework that is explicitly used in the system of *Chase* (see *Chase*, section 3.3, which references the intended use of the SHARP framework).

3. As per claims 2 and 25, *Chase-Fu* teaches the system further wherein the trigger event comprises one of an initiation trigger event, a regulation trigger event, and a prediction trigger event (*Chase*, section 4, see e.g., the resize functionality).

4. As per claim 3, *Chase-Fu* teaches the system further wherein the operational control parameter comprises a command to regulate the system resource (*Chase*, section 4, see e.g., the resize functionality).

5. As per claim 4, *Chase-Fu* teaches the system further wherein the system resource comprises one of a client processor capacity, a client storage capacity, and a client memory capacity allocated to the grid computing system (*Chase*, page 5, where the resource comprises the ability to run an executable job).

6. As per claims 5, 21, and 26, *Chase-Fu* teaches the system further wherein the regulation module comprises a reservation module configured to reserve the system resource for a grid system operation (*Chase*, overview, see, e.g., the resource reservation of page 3).

7. As per claims 6, 22, and 27, *Chase-Fu* teaches the system further wherein the regulation module comprises a termination module configured to terminate a reservation of a system resource for a grid system operation (*Chase*, page 6, e.g., the priority based

termination based on grid system operation; see also the termination in live trace experiment in section 5.2).

8. As per claims 7 and 28, *Chase-Fu* teaches the system further wherein the regulation module comprises an arbitration module configured to arbitrate conflicting grid system operations according to an arbitration policy (*Chase*, section 3.3 resource negotiation module).

9. As per claims 8 and 29, *Chase-Fu* teaches the system further wherein the regulation module comprises a profile module configured to store a system resource profile, the system resource profile identifying a system resource of a client, the system resource allocated by the client to the grid computing system (*Chase*, see section 4 and 5.2 where resource profiles are maintained for all of the member client nodes).

10. As per claim 9, *Chase-Fu* teaches the system further wherein the plurality of system policies further comprises at least one of a system regulation policy and a system termination policy (*Chase*, section 4).

11. As per claim 23, *Chase* teaches a method for autonomic management of grid system resources on a grid computing system, (*Chase*, abstract and overview sections) the method comprising:

monitoring the grid computing system for a trigger event, the trigger event comprising one of an initiation trigger event, a regulation trigger event, and a prediction trigger event; (*Chase*, section 4, where the resource allocation is based on a trigger event)

accessing one of a plurality of system policies, each of the plurality of system policies corresponding to an operational control parameter of a system resource of the grid computing system, the operational control parameter comprising a command to regulate the system resource; regulating the system resource in response to a recognized trigger event according to one of the plurality of system policies and, (*Chase*, section 4, see e.g., the resource management applied by the VCM on page 5 that changes operational control parameters to regulate system resources based on a plurality of system policies)

the system resource comprising one of a client processor capacity, a client storage capacity, and a client memory capacity allocated to the grid computing system; (*Chase*, page 5, where the resource comprises the ability to run an executable job)

storing a system resource profile, the system resource profile identifying a system resource of a client, the system resource allocated by the client to the grid computing system (*Chase*, see section 4 and 5.2 where resource profiles are maintained for all of the member client nodes).

However, *Chase* fails to specifically teach wherein the plurality of system policies comprises a system prediction policy.

Fu teaches the use of system prediction policies (*Fu*, see overview of pg. 134, paragraphs 2 and 3; see section 2.2 discussing predictive policies where resource use is anticipated).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined *Chase* and *Fu* to provide the framework of *Fu* in the system of *Chase*, because *Fu* describes the SHARP framework that is explicitly used in the system of *Chase* (see *Chase*, section 3.3, which references the intended use of the SHARP framework).

12. As per claim 31, *Chase-Fu* teaches the system further wherein the system prediction policy is based on collected historical information (*Fu*, see, e.g., the lower half of col. 1 on pg. 137 where the use of historical data is contemplated).

13. As per claim 32, *Chase-Fu* teaches the system further wherein the regulation module is further configured to predictively adjust the system resource according to the system prediction policy in anticipation of a typical resource usage (*Fu*, see overview of pg. 134, paragraphs 2 and 3; see section 2.2 discussing predictive policies where resource use is anticipated).

14. As per claim 33, *Chase-Fu* teaches the system further comprising predictively adjusting the system resource according to the system prediction policy in anticipation of a typical resource usage, wherein the system prediction policy is based on collected

historical information (*Fu*, overview of pg. 134, paragraphs 2 and 3; see section 2.2 discussing predictive policies where resource use is anticipated; see, e.g., the lower half of col. 1 on pg. 137 where the use of historical data is contemplated).

15. As per claim 34, *Chase-Fu* teaches the system further comprising adjusting a fee assessed to a user of the grid computing system based on a change in the system resource (*Fu*, see, e.g., fee systems of last paragraph of col. 1, pg. 137).

16. As per claim 35, *Chase-Fu* teaches the system further comprising blocking a potential change in at least one of the system policies according to a threshold corresponding with a subscription criteria (see *Fu*, section 3.5 on pgs. 140-141 and related security implementation details).

(10) Response to Argument

In the Argument, Appellant argued in substance that

(**A**) The prior art of *Fu* fails to teach a system prediction policy. The general references in *Fu* with respect to predictable performance, behavior, and function do not provide a sufficient basis to support a system prediction policy because these general references are not specifically directed to any type of policy which might regulate a system resource in response to a trigger (see Introduction, paragraph 2, section 2.3, and section 4). Further, the oversubscription process described in *Fu* also fails to teach a system prediction policy, as it merely refers to the relationship of how many tickets are issued with respect to the available resources.

As to point (**A**), the claim language describes "wherein the plurality of system policies comprises a system prediction policy." *Fu* teaches a system policy that issues resource tickets to manage the future (i.e., predicted) use of system resources (see section 2.1 overview). To manage the future use of resource tickets, the system enables the predictive issuance of both too many and too few resource tickets (see, e.g., oversubscribing overview of section 2.2 discussing predictive policies where resource use is anticipated). *Fu* teaches the use, inter alia, of probabilities to implement policies that predict future system performance and act accordingly (e.g., section 2.2).

Further, Applicant appears to be relying on a narrow reading of the language "prediction" as requiring more than a "best-effort" attempt at predicting future system behavior. Stated otherwise, any element of unpredictability or inaccuracy in a prediction would preclude a policy from reading on the asserted "prediction policy." The Examiner respectfully asserts that *Fu* teaches a prediction policy that reads on a broadest reasonable interpretation of the claim term "system prediction policy."

(**B**) *Fu* does not provide a sufficient basis to support the Examiner's assertion of a teaching of a system prediction policy because these general references are not specifically directed to any type of policy which might regulate a system resource in response to a trigger.

As to point (**B**), *Chase* was cited in the original final office action as teaching the use of a policy to autonomically regulate system resources in a grid computing system response to a recognized trigger event according to one of a plurality of system policies (*Chase*, section 4, see, e.g., the resize function that applies policies to allocate and reallocate system resources, where the functionality is also performed based on a trigger event). *Fu* describes a system prediction policy (see above) in the context of the SHARP framework that is explicitly used in the system of *Chase* (see *Chase*, section 3.3, which references the intended use of the SHARP framework).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/NICHOLAS TAYLOR/

Examiner, Art Unit 2141

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